



Third United Nations
International Conference
on the Peaceful Uses
of Atomic Energy

A/CONF.28/A/119
POLAND
February 1964
Submitted in:
ENGLISH and RUSSIAN

Confidential until official release during Conference

Abstract

SIX YEARS OF UTILIZATION
OF THE POLISH RESEARCH REACTOR "EWA"

J. Aleksandrowicz, B. Buras, S. Siekierski
Institute of Nuclear Research, Świerk, Poland

The Polish Research Reactor "EWA" at Świerk /2MW, enriched uranium, moderator and coolant- light water, an average thermal neutron flux 10^{13} neutrons/sq.cm.sec/ became critical in 1958. Since that more than 300 papers and reports concerned with work directly connected with the reactor has been published.

The 9 horizontal experimental channels and the thermal column are permanently used for research in the field of solid state, nuclear and reactor physics. 3 triple axes neutron crystal spectrometers, a cold neutron facility /a beryllium filter and a slow chopper with curved slits/, 3 slow choppers, a fast chopper, a special apparatus for in-pile irradiation, a pile oscillator and some other additional equipment - all home made - enable research on crystal and magnetic neutron structure analysis, neutron-phonon and neutron-magnon interactions, microdynamics of molecules, fast neutron induced damage in semiconductors, neutron resonance scattering, (n, γ) reactions /including short lived isotopes/, tri-partition of U 235, neutron diffusion, and neutron flux and spectra measurements.

Irradiation facilities within the reactor enabled activation analysis, chemistry of hot atoms and also the production of radioisotopes widely used in the country in the physical and chemical sciences, life sciences and industry.

The reactor "EWA" itself is also the object of extensive studies, changes and improvements /e.g. mechanical and ion-exchange filters for the first cooling circuit, corrosion studies, automatic control of slow reactivity changes etc./.

It undergoes a steady evolution with the aim to meet the actual and steady varying needs of the users. The power of the reactor will be increased to 4 MW in 1964 and plans are made to reach 10 MW by 1966. Using the same fuel elements as for "EWA" a very flexible and inexpensive zero power reactor "MARYLA" has been put into operation in the main reactor hall. This has facilitated to shift several experiments needing small power /e.g. the reactor oscillator/ from "EWA" to "MARYLA" and run the "EWA" reactor round the clock on full power.

Special ways and means to meet the various objectives of the reactor have been developed and established. The Laboratory for Reactor Exploitation has been created and it fulfils the task of reactor operation and development, trains specialists in this field and - on a limited scale - also in reactor physics and reactor design. In order to co-ordinate the fulfilment of the growing demand for experimental channels and irradiation space and sometimes contradictory needs of users a special reactor co-ordination and planning committee has been formed. This committee collaborates with the users of the reactor: Laboratories of the Institute of Nuclear Research, Institute of Nuclear Physics and a number of other scientific, technical and industrial institutions in the country. As a result of close contacts with universities many theses for MSc and PhD degrees have been performed at the Reactor. Collaboration with other reactor centers abroad and with the Joint Institute of Nuclear Research in Dubna /USSR/ takes place, too.